Chesapeake Bay TMDL Action Plan

Prepared in compliance with General Permit No. VAR040060

PUBLIC REVIEW DRAFT

May 3, 2015

Department of Public Works
Stormwater Management
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CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

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1. Introduction

1.1 Purpose

This Chesapeake Bay TMDL Action Plan documents how the Town of Herndon intends to meet the "Special Condition for the Chesapeake Bay TMDL" in Section I, Part C of the Town's General Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4s). The Town's most recent permit (VAR040060) was issued by the Virginia Department of Environmental Quality (DEQ) effective July 1, 2013 and will expire June 30, 2018.

The Town's MS4 permit requires the development and implementation of action plans for impaired streams where a Total Maximum Daily Load (TMDL) assigns a waste load allocation (WLA) to the Town that has been approved by the State Water Control Board. A TMDL establishes the maximum amount of a pollutant that can enter a water body without violating water quality standards.

A TMDL for the Chesapeake Bay was established by the U.S. Environmental Protection Agency in 2010. Pollutants of concern (POCs) identified for the Chesapeake Bay include total nitrogen (TN), total phosphorus (TP), and total suspended solids (TSS). Virginia subsequently developed and adopted a Watershed Implementation Plan (WIP) that establishes the framework for meeting the Chesapeake Bay TMDL. The Virginia WIP states that MS4 permit holders will implement a phased approach for meeting required reductions over three five-year permit cycles in accordance with the following: 5% of required reductions by the end of the first permit cycle (June 30, 2018); a total of 40% of required reductions by the end of the second permit cycle; and, 100% of required reductions by the end of the third permit cycle.

This Chesapeake Bay TMDL Action Plan establishes the 5% reduction target and the means and methods for achieving the reduction target in accordance with the MS4 permit and the Chesapeake Bay TMDL Special Condition Guidance developed by DEQ (Guidance Memo No 14-2012).[1]

1.2 Cooperative Approach to Implementation

As allowed by Section I.C.2.b(3) of the Town's MS4 permit, the Town has entered into an agreement with Fairfax County to develop a Joint Chesapeake Bay TMDL Action Plan, which

[1] DEQ's guidance was originally released August 18, 2014. Draft revisions were released on March 19, 2015. This plan relies on the March 19, 2015 version unless specifically noted. Final revisions are expected to be published by DEQ in early May.

also includes the Town of Vienna. The agreement, included as Appendix A, was adopted by the Town of Herndon on January 6, 2014 and by Fairfax County on April 1, 2014.

Fairfax County's Phase I MS4 permit was re-issued and effective April 1, 2015. The County has 24 months from the effective date of the permit to develop a Chesapeake Bay TMDL Action Plan. As a result, the Town is submitting this stand-alone Chesapeake Bay TMDL Action Plan until such time that it is incorporated into the Joint Chesapeake Bay TMDL Action Plan. During the joint planning process, the Town will coordinate with the County to resolve timing and any other issues that may arise.

The agreement provides that cooperating localities will receive a credit for each stormwater management facility brought on-line beginning July 1, 2009, regardless of its location within the cooperating localities, that is in proportion to the percentage of the total load reductions that are established for each locality. Load reductions have been calculated for the Town of Herndon (see Section 4) and estimated for Fairfax County. The Town of Herndon's proportion of the load reduction was averaged among total nitrogen, total phosphorus, and total suspended sediment. As a result, the County and the Town have agreed that the Town will be credited 2.9% of the pollutant reduction for each eligible stormwater project or practice. Since Fairfax County is in the process of calculating reductions from projects based on DEQ's guidance, this plan presently accounts for only those projects implemented within the Town's jurisdictional boundaries. Additional shared stormwater projects and practices will be accounted for in subsequent plan updates or annual reports.

1.3 Summary of Required Reductions and Means and Methods to Achieve Required Reductions

In accordance with the MS4 permit, the Town must calculate reductions required from existing sources as of June 30, 2009 (Section 4) and then calculate offsets to account for increases in pollutant loads due to new sources initiating construction between July 1, 2009 and June 30, 2014 (Section 6) and grandfathered projects beginning construction after July 1, 2014 (Section 7). The Town must then identify the means and methods to achieve the required POC reductions accordingly.

The Town calculates that the following reductions must be achieved from existing sources as of June 30, 2009: 121.1 pounds for TN, 11.6 pounds for TP, and 13,038.8 pounds for TSS. The Town will achieve the reductions through a combination of means and methods as detailed in Section 5. Means and methods include:

- the Town's share of credit (2.9%) for implemented and planned stormwater management projects within its boundary;
- redevelopment between July 1, 2009 and June 30, 2014 that resulted in a decrease in pollutant loads; and,
- street sweeping.

These practices are anticipated to result in the following POC reductions: 552.03 pounds for TN, 213.54 pounds for TP, and 65,205.89 pounds for TSS. These practices exceed required reductions from existing sources.

The Town will also take credit for any additional redevelopment after June 30, 2014 that results in a decrease in pollutant loads, purchased off-site nutrient credits (Section 5.4), more stringent regulation of single family residential structures under one acre (Section 5.5), and additional means and methods that may be implemented during the current permit cycle in accordance with DEQ's Chesapeake Bay TMDL Special Conditions Guidance (Section 5.6). Any credits will be documented in the Town's annual report to DEQ.

During the period of July 1, 2009 through June 30, 2014, two projects with a land disturbance of one acre or greater resulted in an increase in pollutant loads. The Town must offset 5% of the increase in POC loads from these projects. The required offset is 2.76 pounds for TN, 0.40 pound for TP, and 187.42 pounds for TSS. The Town will apply excess credit from reductions required for existing sources to offset required reductions from new sources. No grandfathered projects requiring offsets have been identified by the Town. As demonstrated in Table 1A, total existing and planned credits exceed total reduction requirements.

Table 1A– Summary of Required Reductions and Means and Methods to Achieve Required Reductions

	Total Nitrogen (lbs)	**Total Phosphorus (lbs)**	**Total Suspended Solids (lbs)**
Required Reductions from Existing Sources	121.1	11.6	13,038.8
- Means and Methods from Section 5	552.03	213.54	65,205.89
= Excess Credit from Existing Sources	430.93	201.94	52,167.09
Required New Source Offsets	2.76	0.40	187.42
- Excess Credit from Existing Sources	430.93	201.94	52,167.09
Remaining Excess Credit After Accounting for New Source Offsets	428.18	201.54	51,979.67
Required Grandfathered Offsets	0	0	0
Remaining Excess Credit After Accounting for Grandfathered Source Offsets	428.18	201.54	51,979.67

1.4 Permit Compliance Crosswalk

Table 1B provides each of the requirements of the Town's MS4 permit and the specific section where the requirement is addressed in this Chesapeake Bay TMDL Action Plan.

Table 1B – Action Plan and Permit Compliance Crosswalk

Herndon Action Plan Section	Element from DEQ TMDL Special Condition Guidance	MS4 Permit	MS4 Permit Requirement
Section 2.1	Part VI.1 – Current Program and Existing Legal Authority	Section I.C.2.a(1)	A review of the current MS4 program implemented as a requirement of this state permit including a review of the existing legal authorities and the operator's ability to ensure compliance with this special condition.
Section 2.2	Part VI.2 – New or Modified Legal Authority	Section I.C.2.a(2)	The identification of any new or modified legal authorities such as ordinances, state and other permits, orders, specific contract language, and inter-jurisdictional agreements implemented or needing to be implemented to meet the requirements of this special condition.
Section 3	Part VI.3 – Means and Methods to Address Discharges from New Sources	Section I.C.2.a(3)	The means and methods that will be utilized to address discharges into the MS4 from new sources.
Section 4	Part VI.4 – Estimated Existing Source Loads and Calculated Total Pollutants of Concern (POC) Required Reductions	Section I.C.2.a(4) and Section I.C.2.a(5)	An estimate of the annual POC loads discharged from the existing sources as of June 30, 2009, based on the 2009 progress run. The operator shall utilize the applicable versions of Tables 2 a-d in this section based on the river basin to which the MS4 discharges by multiplying the total existing acres served by the MS4 on June 30, 2009 and the 2009 Edge of Stream (EOS) loading rate. A determination of the total pollutant load reductions necessary to reduce the annual POC loads from existing sources utilizing the applicable versions of Tables 3 a-d in this section based on the river basin to which the MS4 discharges. This shall be calculated by multiplying the total existing acres served by the MS4 by the first permit cycle required reduction in loading rate. For the purpose of this determination, the operator shall utilize those existing acres identified by the 2000 U.S. Census Bureau urbanized area and served by the MS4.

Herndon Action Plan Section	Element from DEQ TMDL Special Condition Guidance	MS4 Permit	MS4 Permit Requirement
Section 5	Part VI.5 – Means and Methods to Meet the Required Reductions and Schedule	Section I.C.2.a(6)	The means and methods, such as best management practices and retrofit programs that will be utilized to meet the required reductions included in subdivision 2.a(5) of this subsection, and a schedule to achieve those reductions. The schedule should include annual benchmarks to demonstrate the ongoing progress in meeting those reductions.
Section 6	Part VI.6 – Means and Methods to Offset Increased Loads from New Sources Initiating Construction between July 1, 2009 and June 30, 2014	Section I.C.2.a(7)	The means and methods to offset the increased loads from new sources initiating construction between July 1, 2009 and June 30, 2014 that disturb one acre or greater as a result of the utilization of an average land cover condition greater than 16% impervious cover for the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids. The operator shall offset 5.0% of the calculated increased load from these new sources during the permit cycle.
Section 7	Part VI.7 – Means and Methods to Offset Increased Loads from Grandfathered Projects that Begin Construction after July 1, 2014	Section I.C.2.a(8)	The means and methods to offset the increased loads from projects as grandfathered in accordance with 4VAC50-60-48 that disturb one acre or greater that begin construction after July 1, 2014, where the project utilizes an average land cover condition greater than 16% impervious cover in the design of post-development stormwater management facilities. The operator shall utilize Table 4 in this section to develop the equivalent pollutant load for nitrogen and total suspended solids.
Section 8	Part VI.8 – List of Future Projects, and Associated Acreage that Qualify as Grandfathered	Section I.C.2.a(10)	A list of future projects and associated acreage that qualify as grandfathered in accordance with 4VAC50-60-48.
Section 9	Part VI.9 – Estimated Expected Cost to Implement Necessary Reductions	Section I.C.2.a(11)	An estimate of the expected costs to implement the requirements of this special condition during the state permit cycle.

Herndon Action Plan Section	Element from DEQ TMDL Special Condition Guidance	MS4 Permit	MS4 Permit Requirement
Section 10	Part VI.10.a&b – Public Comments on Draft Action Plan	Section I.C.2.a(12)	An opportunity for receipt and consideration of public comment regarding the draft Chesapeake Bay TMDL Action Plan. A list of all comments received as a result of public comment and any modifications made to the draft Chesapeake Bay TMDL Action Plan as a result of the public comments.

2. Current Program and Legal Authority

2.1 Current Program and Existing Legal Authority

The Town has adopted an MS4 Program Plan that documents implementation of all MS4 permit requirements, including the programmatic and legal authorities required to meet the "Special Condition for the Chesapeake Bay TMDL." The full MS4 Program Plan can be found at http://herndon-va.gov/Content/Town_Services/Storm_Water_Management/default.aspx. Table 2A provides a summary of elements of the six minimum control measures (MCMs) implemented by the Town under the MS4 permit that relate to controlling total nitrogen, total phosphorus, and total suspended solids.

Table 2A – MS4 Program Plan Components Related to Meeting the Chesapeake Bay TMDL

Minimum Control Measure	MS4 Program Plan Elements Related to Controlling Total Nitrogen, Total Phosphorus, and Total Suspended Solids
Public Education and Outreach on Stormwater Impacts.	The Town's MS4 Public Education and Outreach Plan identifies Chesapeake Bay nutrients as one of its three high-priority pollutants for the focus of the Town's public education program during the permit cycle. Actions specific to nutrients and their impact on the Chesapeake Bay include: • Annually prepare and distribute two press releases that address seasonally-specific stormwater pollution prevention tactics related to nutrients. In addition to being provided to the news media, press releases will be delivered to the public on the web site and in the weekly Town newsletter "What's On in Herndon: News You Can Use." • Include a specific message addressing nutrients annually in the Town Calendar and Events Guide. • Starting FY15, include a relevant educational message in one of the quarterly residential water bills each year. For example, the following will be used in FY15: "Help Protect our Water - Nutrients found in fertilizer can cause "dead zones" in the Chesapeake Bay where fish, crabs and other aquatic life can't survive. Test the soil first to see if your lawn needs fertilizer and avoid applying when rain is expected." Alternative language may be used in future years.

Minimum Control Measure	MS4 Program Plan Elements Related to Controlling Total Nitrogen, Total Phosphorus, and Total Suspended Solids
	• Continue to participate in the NVRC Clean Water Partners program regional efforts to reduce water quality impacts from nutrients in fertilizers. • Continue to maintain the stormwater web page and update the "Fertilizer/Lawn Care" topic during FY15 with a link to the NVRC website at http://www.onlyrain.org/.
Public Involvement and Participation	The Town has designed a program to involve the public in the decision-making process by meeting all public notice requirements, updating the Town Council and/or Planning Commission on MS4 activities at least annually, and sponsoring at least four watershed management activities annually.
Illicit Discharge Detection and Elimination	The Town has integrated into its MS4 Program Plan an Illicit Discharge Detection and Elimination Program. This program includes preventing, identifying, and eliminating sources of pollutants, including total nitrogen and total phosphorus as well as total suspended solids.
Construction Site Stormwater Runoff Control	The Town's construction site stormwater runoff control program is designed to be fully consistent with the water quality control requirements of the Virginia Erosion and Sediment Control Act and the Virginia Stormwater Management Act, and their attendant regulations.
Post-Construction Stormwater Management	The Town's construction site stormwater runoff control program is designed to be fully consistent with the water quality control requirements of the Virginia Stormwater Management Act and its attendant regulations.
Pollution Prevention and Good Housekeeping for Municipal Operations	The Town has included in its MS4 Program Plan actions to meet the pollution prevention and good housekeeping requirements for municipal operations. This includes general good housekeeping, as well as specific requirements to develop nutrient management plans for all properties where nutrients are applied to more than one contiguous acre.

2.2 New or Modified Legal Authority

After review of the Town's existing MS4 Program Plan and legal authorities, the Town finds that no additional legal authorities are required for compliance with the "Special Condition for the Chesapeake Bay TMDL."

As described in Section 1.2, the Town has entered into a cooperative agreement with Fairfax County that establishes a credit-sharing process for projects implemented by Fairfax County and/or the Town. This agreement will achieve efficiencies by allowing the Town and the County to implement projects where they will achieve maximum benefit regardless of their physical location.

3. Means and Methods to Address Discharges from New Sources

The Town must identify and implement the means and methods necessary to address discharges into the MS4 from new sources. Any new source that disturbs one acre or greater and utilizes an average land cover condition greater than 16% impervious cover for the design of post-development stormwater management facilities must be offset in accordance with Section I.C.2.a(3) of the permit. Between July 1,

2009 and June 30, 2014, the Town utilized an average land cover condition of 41%. The total offsets required to be addressed by this plan are established in Section 6.

The Town Council has adopted stringent new stormwater quality requirements (Town Code Chapter 26, Article VIII "Stormwater Management") that meet or exceed the state's minimum requirements for discharges from new sources. The Town was approved as a Virginia Stormwater Management Program (VSMP) by DEQ on May 7, 2014. The new requirements, which became effective July 1, 2014, meet the requirements of the Virginia Stormwater Management Act (§62.1-44.15:24 et seq, Code of Virginia), the Erosion and Sediment Control Act (§62.1-44.15:51 et seq, Code of Virginia), the Chesapeake Bay Preservation Act (§62.1-44.15:67 et seq, Code of Virginia), and their attendant regulations.

The Town's ordinance applies to any land-disturbing activity 2,500 square feet and greater, regardless of land use type, which is more stringent than the one acre threshold required in the permit and the Virginia Stormwater Management Regulations (9VAC25-870). All new development must meet a standard of 0.41 pounds of phosphorus per acre per year. All redevelopment must reduce the phosphorus load by 20% if the land disturbance is one acre or greater or by 10% if the land disturbance is less than one acre (not to exceed the 0.41 standard for new development). The standard of 0.41 pounds of phosphorus per acre per year is mandated by the Virginia Stormwater Management Regulations, and according to DEQ's guidance meets the requirement for no-net-increase from new sources.

A full copy of the Town's stormwater management ordinance can be found at the following website: https://www.municode.com/library/va/herndon/codes/code_of_ordinances?nodeId=PTIICOOR_CH26EN_ARTVIIISTMA.

4. Estimated Existing Source Loads and Calculated Total Pollutant of Concern (POC) Required Reductions

The following sections describe the methodology used by the Town to estimate existing POC source loads. In accordance with the MS4 permit, the Town must estimate the annual POC loads discharged from existing sources as of June 30, 2009, based on the 2009 progress run. Completed calculation tables from the permit are included in Table 4A.

4.1 MS4 Service Area Delineation Methodology

Storm sewer system GIS data (including MS4 outfalls) were used in conjunction with hydrologic features, local topographic data, and high-resolution aerial photos to delineate the Town's MS4 boundary and create an MS4 boundary polygon layer. Artificial conveyances and natural drainage features were thoroughly reviewed in a GIS environment by engineers and planners in order to accurately account for storm sewer drainage areas and determine break points between the manmade and natural hydrologic systems.

In accordance with Part II.2 of the Chesapeake Bay TMDL Special Conditions Guidance, the Town of Herndon and Fairfax County have cooperatively agreed to utilize the following methodology for allocating pollutant loadings where drainage flows across jurisdictional boundaries:

- Any pollutant loading from an area of the Town that drains through a pipe or other conveyance to the County's regulated system remains the responsibility of the Town up-flow of the interconnection.

- Any pollutant loading from an area of Fairfax County that drains through a pipe or other conveyance to the Town's regulated system is not the responsibility of the Town.

- By agreement between the County and the Town, any pollutant loading from an area of the Town that sheet flows across jurisdictional boundaries to the County's regulated system remains the responsibility of the Town within the Town's boundary.

- By agreement between the County and the Town, any pollutant loading from an area of the County that sheet flows across jurisdictional boundaries to the Town's regulated system is not the responsibility of the Town.

- By agreement between the County and the Town, any pollutant loading from property owned by Fairfax County Public Schools within the Town is not the responsibility of the Town. The County has a separate memorandum of understanding with Fairfax County Public Schools addressing Chesapeake Bay TMDL requirements.

There are no identified interconnections with the Virginia Department of Transportation MS4, nor does sheetflow from or to the VDOT system affect the Town.

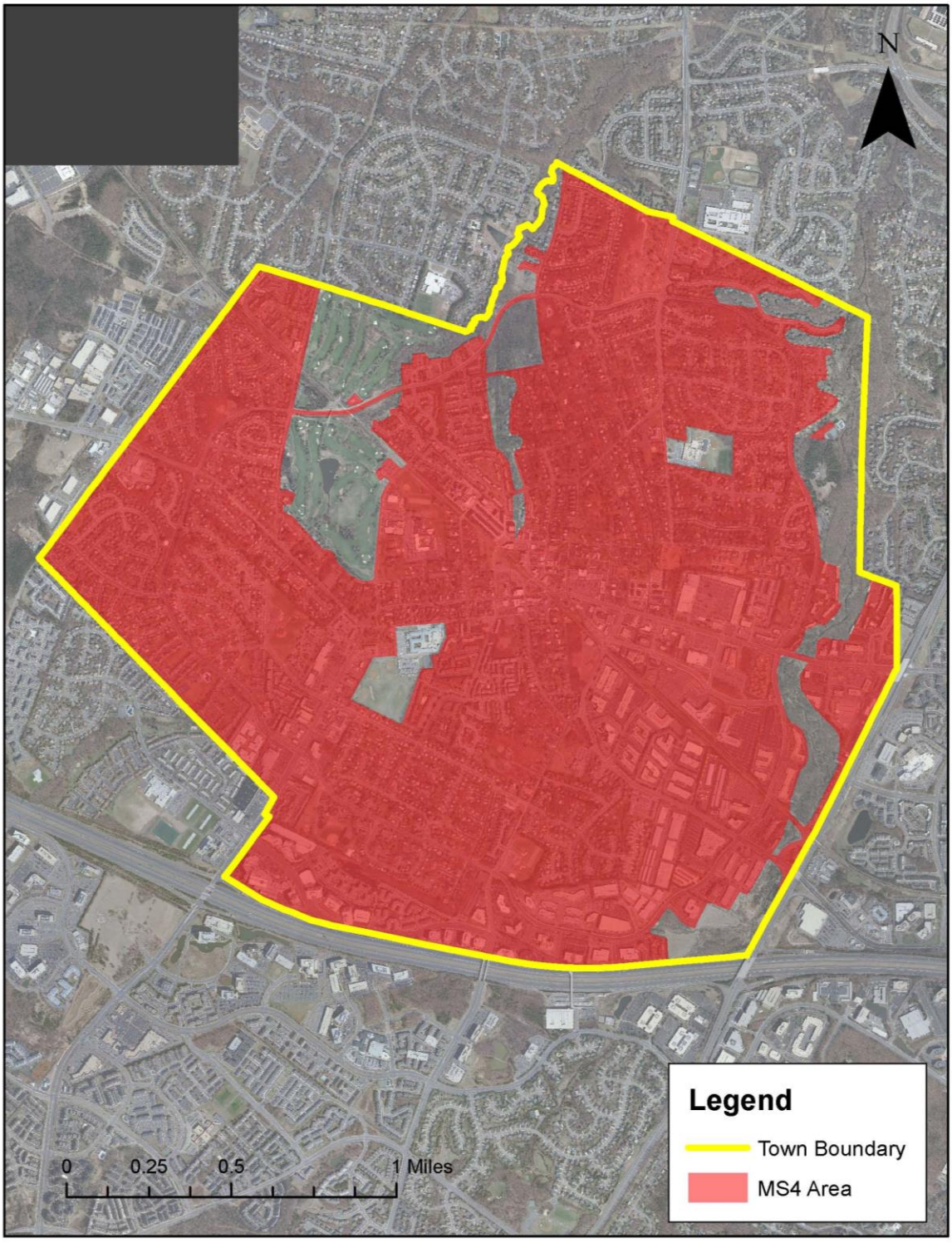
In accordance with DEQ's Chesapeake Bay TMDL Special Guidance, the Town may exclude from its MS4 service area land regulated under any general VPDES permit that addresses industrial stormwater and forested land one half contiguous acre or more that meets specific criteria. The Town has not identified within its boundary any property with a VPDES industrial stormwater permit. The Town has identified 13.6 acres of potential forested area within the MS4, which is less than one percent of the total MS4 area. Further analysis would be required to determine whether these acres meet the requirements for exclusion in accordance with the DEQ guidance. Since this amount is *de minimis*, the Town has opted not to exclude these areas for this plan, but may choose to conduct the additional analysis at a later date.

4.2 Pervious and Impervious Surface Delineation Methodology

A GIS approach was used to determine the Town's regulated urban impervious and regulated urban pervious acres. Planimetric impervious cover GIS data was developed by Fairfax County from 2009 aerial imagery. This impervious cover dataset contains the entire Town as well as areas within the County. Impervious cover surfaces include buildings, roads, parking lots, sidewalks, recreational surfaces, and other similar features.

To calculate the 2009 impervious regulated area, the 2009 planimetric impervious cover features were clipped using the MS4 boundary polygon layer and the resulting acres were totaled. Regulated pervious acres were calculated by subtracting the regulated impervious acres from the total MS4 acres.

Map 4A – Town of Herndon MS4 Service Area Delineation



4.3 Estimated Existing Source Loads

The Town must estimate the total existing source loads for total nitrogen, total phosphorus, and total suspended solids as of June 30, 2009 based on the 2009 Chesapeake Bay Model progress run and using 2009 Edge of Stream (EOS) loading rates. Since the Town is within the Potomac River watershed, the 2009 EOS loading rates from Table 2b of the MS4 permit must be utilized. The Town has a total of 2,323 acres served by the regulated MS4.

Table 4A presents the estimated existing source loads in accordance with the MS4 permit and the Chesapeake Bay TMDL Special Conditions Guidance.

Table 4A – Estimated Existing Source Loads

Source	**Pollutant**	**Total Existing Acres Served by MS4 (6/30/09)**	**2009 EOS Loading Rate (lbs/acre)**	**Estimated Total POC Load Based on 2009 Progress Run**	
Regulated Urban Impervious	Nitrogen	1,028.4	16.86	17,338	30,374
Regulated Urban Pervious		1,294.6	10.07	13,036	
Regulated Urban Impervious	Phosphorus	1,028.4	1.62	1,666	2,197
Regulated Urban Pervious		1,294.6	0.41	531	
Regulated Urban Impervious	Total Suspended Solids	1,028.4	1,171.32	1,204,530	1,432,117
Regulated Urban Pervious		1,294.6	175.8	227,587	

4.4 Required Reductions from Existing Source Loads

The reductions from the estimated existing source loads (loads in existence as of June 30, 2009) in Table 4A must be calculated using Table 3b of the MS4 permit. Table 4B shows the completed calculations from Table 3b of the permit.

Table 4B – Required Reductions from Estimated Existing Source Loads

Source	Pollutant	Total Existing Acres Served by MS4 (6/30/09)	First Permit Cycle required Reduction in Loading Rate (lbs/acre)	Total Reduction Required First Permit Cycle (lbs)	
Regulated Urban Impervious	Nitrogen	1,028.4	0.08	82.3	121.1
Regulated Urban Pervious		1,294.6	0.03	38.8	
Regulated Urban Impervious	Phosphorus	1,028.4	0.01	10.3	11.6
Regulated Urban Pervious		1,294.6	0.001	1.3	
Regulated Urban Impervious	Total Suspended Solids	1,028.4	11.71	12,042.0	13,038.8
Regulated Urban Pervious		1,294.6	0.77	996.8	

5. Means and Methods to Meet Required Reductions and Schedule

This section describes the means and methods by which the Town will achieve the 5% reductions required for source loads in existence as of June 30, 2009 as calculated in Section 4. The Town's reductions will be achieved through a combination of street sweeping (Section 5.1), shared credit for projects based on the cooperative agreement with Fairfax County (Section 5.2), and redevelopment projects (Section 5.3). In addition, the Town will take credit for any purchase of off-site nutrient credits (Section 5.4) and more stringent regulation of single family residential structures under one acre (Section 5.5). Finally, the Town reserves the right to take credit for additional means and methods that may be implemented during the current permit cycle in accordance with DEQ's Chesapeake Bay TMDL Special Conditions Guidance (Section 5.6).

5.1 Street Sweeping

The Town will take credit for its street sweeping program to meet required POC reductions. In its MS4 Fiscal Year 2014 Annual Report, the Town reported that it swept approximately 137.5 lane

miles and collected 150 tons (300,000 pounds) of debris. In future years, the Town will maintain this level of effort and refine documentation of the amount of debris collected. DEQ's Chesapeake Bay TMDL Special Conditions Guidance provides the specific steps required for determining credit for street sweeping programs as well as efficiencies for reducing TN, TP, and TSS.[2] Table 5A summarizes reductions achieved through the Town's street sweeping program.

Table 5A – Summary of Reductions from Street Sweeping

Pollutant	Pounds of Debris Collected	Dry Weight Factor	Dry Pounds Collected	Removal Efficiency	Pollutant Reduction (lbs)
Total Nitrogen	300,000	0.7	210,000	0.0025	525
Total Phosphorus	300,000	0.7	210,000	0.001	210
Total Suspended Solids	300,000	0.7	210,000	0.3	63,000

5.2 Shared Credit Projects

The Town will take credit for projects implemented cooperatively between Fairfax County and the Town of Herndon after July 1, 2009 that are located within the Town's jurisdictional boundary. The Town will also take credit for projects planned to be completed prior to the end of this permit cycle. This plan includes one such project, the Four Seasons dry extended detention pond retrofit, and may include additional projects that will be reported to DEQ in the Town's annual reports. Information on implemented and planned projects is included in Appendix B in accordance with the Chesapeake Bay TMDL Special Condition Guidance. The Town receives 2.9% credit for pollutant reductions achieved by each facility in accordance with the cooperative agreement.

In the future Joint Chesapeake Bay TMDL Action Plan that will be developed under the cooperative agreement with Fairfax County, the Town will take 2.9% credit for pollutant reductions achieved by all facilities covered by the cooperative agreement regardless of location within Fairfax County, the Town of Herndon, or the Town of Vienna.

[2] The March 19, 2015 proposed changes to the DEQ guidance places several programmatic restrictions on taking credit for street sweeping (for example, the program must sweep at least 26 times per year). Based on an email from DEQ on April 16, 2015, the Town has been authorized to take credit for street sweeping under the DEQ guidance without the programmatic restrictions.

Table 5B – Summary of Reductions from Shared Credit Projects

	Total Nitrogen Reduction (lbs)	Total Phosphorus Reduction (lbs)	Total Suspended Solids Reduction (lbs)
Implemented Reductions	122.19	9.96	16,585.44
Planned Reductions	53.41	2.50	8,034.18
Total Reductions	175.60	12.46	24,619.62
Credit to Herndon (2.9%)	5.09	0.36	713.97

5.3 Redevelopment

In accordance with the Chesapeake Bay TMDL Special Condition Guidance the Town may receive credit for pollutant reductions from redevelopment regardless of the initial land cover condition of the site. This applies to any redevelopment project initiated after July 1, 2009. Three qualifying projects have been identified by the Town, which are included in Appendix C. These projects are not part of the cooperative agreement with Fairfax County and therefore the Town takes 100% credit for these projects. For projects completed prior to July 1, 2014, the Town used the simple method to determine the amount of TP credit and used Table 4 from the MS4 permit to determine the equivalent credit for TN and TSS.[3]

Table 5C – Summary of Reductions from Redevelopment

	Total Nitrogen Reduction (lbs)	Total Phosphorus Reduction (lbs)	Total Suspended Solids Reduction (lbs)
Total Reductions	21.94	3.18	1,491.92

5.4 Purchased Off-Site Nutrient Credits

The Town has the option of purchasing off-site nutrient credits under the provisions of §62.1-44.15:35 of the Code of Virginia. Likewise, the Town may take credit for any off-site nutrient credit purchased by a private developer that exceeds the requirements of Town Code Chapter 26, Article VIII "Stormwater Management." Any reductions achieved will be documented to DEQ in the Town's annual report.

[3] DEQ's guidance requires that the simple method be used to calculate offsets required for new sources between July 1, 2009 and June 30, 2014. The guidance is silent on the methodology to use for redevelopment. Kelsey Brooks, DEQ, confirmed in a phone conversation on April 23, 2015 that the simple method could be used for redevelopment project prior to July 1, 2014 to maintain consistency with the method used at the time of redevelopment.

5.5 More Stringent Single Family Residential Development

The Town has adopted stormwater quality requirements for single family residential development under one acre that are more stringent than the minimum VSMP requirements. Specifically, Town Code Chapter 26, Article VIII "Stormwater Management" applies the 0.41 pounds of phosphorus per acre per year standard to single family residential development 2,500 square feet and greater even though the Town could have exempted all such development under one acre. In accordance with the Chesapeake Bay TMDL Special Condition Guidance, the Town will take credit for the difference between the pollutant load that could have been allowed for single family residential property under the state's minimum water quality criteria and the pollutant load that was actually allowed for the property under the Town's more stringent requirements. Reductions achieved will be documented to DEQ in the Town's annual report.

5.6 Additional Means and Methods

The Town reserves the right to implement and take credit for additional creditable facilities or practices as provided for in the Chesapeake Bay TMDL Special Condition Guidance. The guidance document specifically references the work of the Chesapeake Bay Urban Stormwater Workgroup, which includes credits for urban nutrient management and homeowner best management practices such as rainwater harvesting, downspout disconnection, permeable hard-scapes, tree planting, and impervious cover removal. Reductions achieved will be documented to DEQ in the Town's annual report.

5.7 Compliance Demonstration

Tables 5D through 5F demonstrate how the Town will meet the required reductions from Section 4 for each POC with the means and methods described in Sections 5.1 through 5.5.

Table 5D – Compliance Demonstration for Total Nitrogen

Total Required Reductions (Table 4B)	Total Reductions Achieved (Table 5A, Table 5B, and Table 5C)	Total Reductions Remaining (lbs)	Percentage Target Achieved
121.1	525 + 5.09 + 21.94 = 552.03	-430.93	455.85%

Table 5E – Compliance Demonstration for Total Phosphorus

Total Required Reductions (Table 4B)	Total Reductions Achieved (Table 5A, Table 5B, and Table 5C)	Total Reductions Remaining (lbs)	Percentage Target Achieved
11.6	210 + 0.36 + 3.18 = 213.54	-201.94	1,840.87%

Table 5F – Compliance Demonstration for Total Suspended Solids

Total Required Reductions (Table 4B)	Total Reductions Achieved (Table 5A, Table 5B, and Table 5C)	Total Reductions Remaining (lbs)	Percentage Target Achieved
13,038.8	63,000 + 713.97 + 1,491.92 = 65,205.89	-52,167.09	500.09%

6. Means and Methods to Offset Increased Loads from New Sources Initiating Construction Between July 1, 2009 and June 30, 2014

The Town must calculate any new POC loads between July 1, 2009 and June 30, 2014 that were due to water quality requirements less stringent than 16% impervious cover. The Town must then achieve a 5% reduction in the new loads during this permit cycle. In accordance with the DEQ guidance, the Town used the simple method to determine the excess TP that needs to be offset. Table 4 from the MS4 permit was used to determine the equivalent reduction required for TN and TSS.

During the period of July 1, 2009 and June 30, 2014, two projects with a land disturbance of one acre or greater resulted in increases in pollutant loadings. These projects are summarized in Table 6A. Additional details are included in Appendix D.

Table 6A – Required Reductions from New Sources

Project ≥ 1 Acre	Site (acres)	Total Increase (lbs)		Required 5% Reduction (lbs)	
Vinehaven	2.41	N	4.93		
		P	0.71		
		S	335.10		
Monroe Hill Subdivision	3.94	N	50.19		
		P	7.27		
		S	3,413.21		
Total	6.35	N	55.12	N	2.76
		P	7.99	P	0.40
		S	3,748.31	S	187.42

The Town will achieve reductions using excess credit from projects implemented in Section 5 and summarized in Tables 5D through 5F.

Table 6B – Compliance Demonstration for Total Nitrogen

Total Required Reductions (Table 6A)	Excess Credit from Table 5D	Total Reductions Remaining (lbs)	Percentage Target Achieved
2.76	430.93	-428.18	15,635.54%

Table 6C – Compliance Demonstration for Total Phosphorus

Total Required Reductions (Table 6A)	Excess Credit from Table 5E	Total Reductions Remaining (lbs)	Percentage Target Achieved
0.40	201.94	-201.54	50,556.54%

Table 6D – Compliance Demonstration for Total Suspended Solids

Total Required Reductions (Table 6A)	Excess Credit from Table 5F	Total Reductions Remaining (lbs)	Percentage Target Achieved
187.42	52,167.09	-51,979.67	27,835.00%

7. Means and Methods to Offset Increased Loads from Grandfathered Projects Beginning Construction After July 1, 2014

The Town must calculate new POC loads from grandfathered projects initiating construction after July 1, 2014 and disturbing one acre or greater. Unlike POCs from sources in Section 5 and Section 6, loads from grandfathered projects must be 100% offset prior to the completion of the project. The Town has not identified any existing projects that meet this criteria and therefore no offset is required.

8. List of Future Projects Qualifying as Grandfathered

The Town must list projects in addition to those in Section 7 that qualify as grandfathered in accordance with 9VAC25-870-48. No such projects have been identified for the Town.

9. Estimated Cost of Compliance

Table 9A provides a summary of the estimated cost to implement projects in Section 5. These projects exceed the POC reduction requirements of this permit cycle.

Table 9A – Estimated Cost of Compliance

Strategy	Cost Explanation	Estimated Cost
Street Sweeping	Annual budgeted cost of street sweeping based on adopted FY15 budget.	$95,000/year
Shared Credit Projects	• Runnymede Bioretention and Tree Box Filter: $275,000 – the Town was reimbursed $200,000 as a Green Project Reserve grant (50% cash and 50% low interest loan) • Golf Course Pond Retrofit: $244,000 – part of revenue sharing agreement with Fairfax County • Four Seasons Dry Pond: $168,520 – part of revenue sharing agreement with Fairfax County	$687,520 total Town share includes: • $175,000 Town share of Runnymede project ($75,000 plus $100,000 low cost loan) • $11,963 Town share of 2.9% revenue sharing with Fairfax County
Redevelopment	No cost for redevelopment projects. Dranesville Road and Van Buren Street median projects were VDOT revenue sharing projects and reimbursed at 50% by VDOT.	

Ensuring an adequate funding source for meeting the Chesapeake Bay TMDL is a key component of the cooperative agreement with Fairfax County. The County adopted a Stormwater Service District tax in Fiscal Year 2010 in accordance with § 15.2-2400 of the Code of Virginia. The Stormwater Service District provides a dedicated revenue stream for stormwater management, including Chesapeake Bay TMDL compliance. The Stormwater Service District tax was increased to $0.0225 per $100 of assessed real estate value in Fiscal Year 2015. This rate will be continuously assessed by the Board of Supervisors.

10. Public Comment Plan

The public comment process for the Town of Herndon Chesapeake Bay TMDL Action Plan included a work session of the Town Council on May 5, 2015 followed by a public comment period through June 12, 2015. In addition to being announced at the work session, the opportunity for public comment was announced on the Town's web page and through the Town's social media outlets. The draft plan was posted on the Town's web site.

Public comments are summarized in the table below and were taken into consideration in developing the final plan.

Table 10A – Public Comments

Appendix A

Cooperative Agreement Between the Fairfax County Board of Supervisors and the Town of Herndon

Appendix B

Detailed Project List

Table Appendix B1 – Reductions from Projects Located in Herndon Implemented On or After July 1, 2009

Project Name: Runnymede Bioretention 1						
Project Description:						
						
Date Installed	**Type**	**Imp. Acres Treated**	**Total Acres Treated**	**Runoff Captured**	**Unit**	**Amount Applied**
11/10/2011	Bioretention	0.91	2.02			2.02
Latitude	**Longitude**	**HUC**	**TN Efficiency**	**TP Efficiency**	**TSS Efficiency**	**Efficiency Unit**
38.971078	-77.370247	20700080905	67	78	84	%
TN Removed	**TP Removed**	**TSS Removed**	**Calculation Method**			
17.76	1.51	1,060.97	Retrofit Curves – RR			

Project Name: Runnymede Bioretention 2

Project Description:

Date Installed	Type	Imp. Acres Treated	Total Acres Treated	Runoff Captured	Unit	Amount Applied
11/10/2011	Bioretention	0.57	1.68			1.68
Latitude	**Longitude**	**HUC**	**TN Efficiency**	**TP Efficiency**	**TSS Efficiency**	**Efficiency Unit**
38.971078	-77.370247	20700080905	67	78	84	%
TN Removed	**TP Removed**	**TSS Removed**	**Calculation Method**			
13.96	1.08	728.25	Retrofit Curves – RR			

Project Name: Runnymede Filtering Device

Project Description:

Date Installed	Type	Imp. Acres Treated	Total Acres Treated	Runoff Captured	Unit	Amount Applied
11/10/2011	Filterra Tree Box Filter	0.27	0.31			0.31
Latitude	**Longitude**	**HUC**	**TN Efficiency**	**TP Efficiency**	**TSS Efficiency**	**Efficiency Unit**
38.971078	-77.370247	20700080905	32	50	64	%
TN Removed	**TP Removed**	**TSS Removed**	**Calculation Method**			
1.59	0.23	206.9	VA BMP Clearinghouse			

Project Name: Golf Course Pond Retrofit

Project Description:

Date Installed	Type	Imp. Acres Treated	Total Acres Treated	Runoff Captured	Unit	Amount Applied
11/10/2011	Dry Extended Detention	18.11	31.4			31.4
Latitude	**Longitude**	**HUC**	**TN Efficiency**	**TP Efficiency**	**TSS Efficiency**	**Efficiency Unit**
38.978665	-77.394194	20700080905	20	20	60	%
TN Removed	**TP Removed**	**TSS Removed**	**Calculation Method**			
88.88	7.14	14,589.32	Chesapeake Bay BMP Efficiencies; Dry Extended Detention			

	Total Nitrogen	Total Phosphorus	Total Suspended Solids
Subtotal POCs Removed	122.19	9.96	16,585.44

Table Appendix B2 – Reductions from Projects Planned to be Implemented During the Current Permit Cycle

Project Name: Four Seasons Dry Extended Detention

Project Description:

Date Planned	Type	Imp. Acres Treated	Total Acres Treated	Runoff Captured	Unit	Amount Applied
2016	Bioretention	11.23	27.78			27.78
Latitude	**Longitude**	**HUC**	**TN Efficiency**	**TP Efficiency**	**TSS Efficiency**	**Efficiency Unit**
38.973142	-77.41141	20700080905	15	10	50	%
TN Removed	**TP Removed**	**TSS Removed**	**Calculation Method**			
53.41	2.5	8,034.18	Chesapeake Bay BMP Efficiencies; Difference Between Dry Detention Ponds and Hydrodynamic Structures and Dry Extended Detention			

	Total Nitrogen	Total Phosphorus	Total Suspended Solids
Subtotal POCs Removed	53.41	2.5	8,034.18

Table Appendix B3 – Total Reductions from Implemented and Planned Projects

	Total Nitrogen	Total Phosphorus	Total Suspended Solids
Total POCs Removed	**175.6**	**12.46**	**24,619.62**

Appendix C

Redevelopment Projects

All calculations for pre-July 1, 2014 redevelopment are based on the simple method ("Chesapeake Bay Method") contained in Chapter 4, Section III.b of the Northern Virginia BMP Handbook.

Wiygul Automotive	Completed September 2011	
Information	**Input**	**As Developed**
Rainfall	40	
Site Area (SF)	56192.4	
Site Area (AC)		1.29
Watershed I %		
Pre-I Area (SF)	17133	
Pre-I Area (AC)		0.39
Pre-I Area (%)		30.49
Pre C Value		1.08
Pre-TP Load		**3.69**
Post-I Area (SF)	40669	
Post-I Area (AC)		0.93
Post-I Area (%)		72.37
Post C Value		1.08
Post-TP Load		**7.97**
Increase/Decrease		4.29
Stormwater Controls		
BMP 1	Filterra Onsite (4)	
Efficiency	0.55	
I Area (AC)	0.94	
TP Removed		4.42
BMP 2	Filterra Offsite	
Efficiency	0.11	
I Area (AC)	0.05	
TP Removed		0.05
BMP 3	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Final Load		3.51
Total Increase/Decrease		**(0.18)**

Dranesville Road Median Improvements		December 2012
Information	**Input**	**As Developed**
Rainfall	40	
Site Area (SF)	121096.8	
Site Area (AC)		2.78
Watershed I %		
Pre-I Area (SF)	99299.376	
Pre-I Area (AC)		2.28
Pre-I Area (%)		82.00
Pre C Value		1.08
Pre-TP Load		**19.31**
Post-I Area (SF)	84767.76	
Post-I Area (AC)		1.95
Post-I Area (%)		70.00
Post C Value		1.08
Post-TP Load		**16.66**
Increase/Decrease		(2.65)
Stormwater Controls		
BMP 1	NA	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 2	NA	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3	NA	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Final Load		16.66
Total Increase/Decrease		**(2.65)**

Van Buren Street Median Improvements		August 2010
Information	**Input**	**As Developed**
Rainfall	40	
Site Area (SF)	32670	
Site Area (AC)		0.75
Watershed I %		
Pre-I Area (SF)	30056.4	
Pre-I Area (AC)		0.69
Pre-I Area (%)		92.00
Pre C Value		1.08
Pre-TP Load		**5.80**
Post-I Area (SF)	28096.2	
Post-I Area (AC)		0.65
Post-I Area (%)		86.00
Post C Value		1.08
Post-TP Load		**5.45**
Increase/Decrease		(0.36)
Stormwater Controls		
BMP 1	NA	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 2	NA	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3	NA	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Final Load		5.45
Total Increase/Decrease		**(0.36)**

Appendix D

New Source Calculations

All calculations for pre-July 1, 2014 development are based on the simple method ("Chesapeake Bay Method") contained in Chapter 4, Section III.b of the Northern Virginia BMP Handbook.

Vinehaven	Completed September 2014	
Information	**Input**	**As Developed**
Rainfall	40	
Site Area (SF)	104979.6	
Site Area (AC)		2.41
Watershed I %		
Pre-I Area (SF)	26136	
Pre-I Area (AC)		0.60
Pre-I Area (%)		24.90
Pre C Value		1.08
Pre-TP Load		**5.82**
Post-I Area (SF)	56628	
Post-I Area (AC)		1.30
Post-I Area (%)		53.94
Post C Value		1.08
Post-TP Load		**11.37**
Increase/Decrease		5.55
Stormwater Controls		
BMP 1	Stormfilter	
Efficiency	0.35	
I Area (AC)	1.58	
TP Removed		4.84
BMP 2		
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
BMP 3	-	
Efficiency	0	
I Area (AC)	0	
TP Removed		0.00
Final Load		6.54
Total Increase/Decrease		**0.71**

Monroe Hill Subdivision		Completed March 2013	
Information	**Input**	**As Developed**	**Using 16% Watershed Condition VSMP Scenario 2**
Rainfall	40		
Site Area (SF)	171626.4		
Site Area (AC)		3.94	3.94
Watershed I %		41	16
Pre-I Area (SF)	20908.8		
Pre-I Area (AC)		0.48	0.48
Pre-I Area (%)		12.18	12.18
Pre C Value		1.08	.26
Pre-TP Load		**14.55**	**1.62**
Post-I Area (SF)	74923.2		
Post-I Area (AC)		1.72	1.72
Post-I Area (%)		43.65	43.65
Post C Value		1.08	1.08
Post-TP Load		**15.38**	**15.38**
Increase/Decrease		0.83	13.76
Stormwater Controls			
BMP 1	Up-Flow Filter		
Efficiency	0.5		
I Area (AC)	1.45		
TP Removed		6.48	6.48
BMP 2			
Efficiency	0		
I Area (AC)	0		
TP Removed		0.00	0.00
BMP 3	-		
Efficiency	0		
I Area (AC)	0		
TP Removed		0.00	0.00
Final Load		8.90	8.90
Total Increase/Decrease		**(5.65)**	**7.27**

VSMP Situation 2: Land disturbing activities where the existing percent impervious cover is less than or equal to the average land cover condition (16%) and the proposed improvements will create a total percent impervious cover which is greater than the average land cover condition (43.7%).	
Requirement: The pollutant discharge after disturbance (15.38) shall not exceed the existing pollutant discharge based on the average land cover condition (1.62).	
Initial Amount to be Made Up: 15.38 - 1.62 = 13.76.	13.76
Amount to be Made Up After BMP: 13.76 - 6.48 = 7.27.	7.27
Required Offset: 7.27.	7.27

Herndon Draft Chesapeake Bay TMDL Action Plan Comments
5/28

1. **More Stringent Development Requirements** – We have clarified in the revised guidance that permittees may receive credit for more stringent development requirements if those requirements exceed state standards, which includes the VSMP requirements and the Chesapeake Bay Preservation Act requirements. Permittees subject to the Chesapeake Bay Preservation Act may not receive credit towards the TMDL for BMPs installed to meet those requirements. I believe the projects you mention under section 5.5 (pg 15) of the Draft Action Plan may fall in to this category and would not be eligible for credit under the TMDL. If this is incorrect – and the BMPs installed on those sites are not implemented to meet the CBPA requirements – please let me know.

2. **Redevelopment Credits** – We have clarified in the finalized guidance the recommended method for calculating credit for reductions from redevelopment. If the reductions are the result of direct removal of impervious cover, which appears to be the case for the Van Buren Street Median Improvements and the Dranesville Road Median Improvements, using the *Table 4* numbers to determine the associated reductions for TN and TSS is acceptable. However, if the reductions are from "oversized" BMPs installed on the site – which appears to be the case for Wiygul Automotive site - it is not appropriate to use *Table 4* to directly calculate the load reductions for TN and TSS. *Table 4* should solely be used to calculate associated loads, not reductions from a BMP. We have clarified the recommended method for calculating the associated reductions for TN and TSS from an oversized or overdesigned BMP in the revised guidance.